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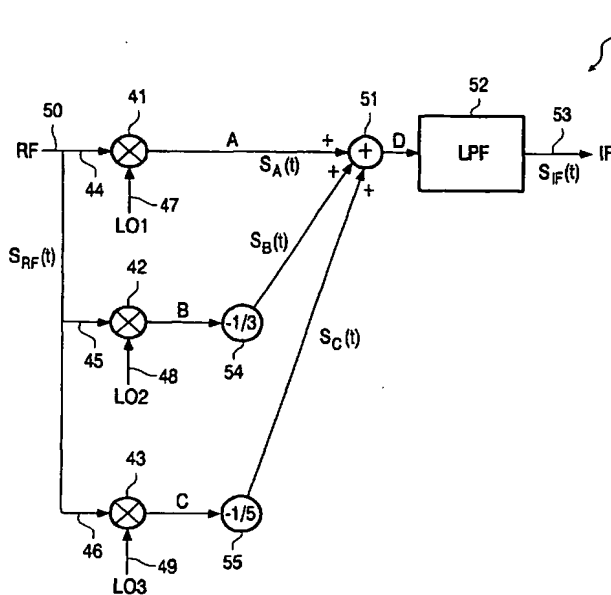
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(54) Title: IMPROVED MIXERS WITH A PLURALITY OF LOCAL OSCILLATORS AND SYSTEMS BASED THEREON



(57) Abstract: Apparatus (40) for processing an input signal ($S_{RF}(t)$) with a carrier frequency (f_{RF}) defining a desired band and at least a sideband being defined by a sideband frequency ($n f_{LO}$) that is higher than the carrier frequency (f_{RF}). The apparatus (40) comprises a main input (50) for receiving said input signal ($S_{RF}(t)$) and a first standard mixer (41) having a first mixer input (44), a first local oscillator input (47), and a first mixer output (A). The first mixer input (44) is connected to the main input (50) and the first local oscillator input (47) is connected to a source that provides a first local oscillator signal (LO1) having a frequency (f_{LO}). This frequency (f_{LO}) is close to or equal to the carrier frequency (f_{RF}). The first standard mixer (41) performs a multiplication of the input signal ($S_{RF}(t)$) and the first local oscillator signal (LO1) to provide a first output signal ($S_A(t)$) at the first mixer output (A). The apparatus (40) further comprises a second mixer (42) with a second mixer input (45), a second local oscillator input (48), and a second mixer output (B). The second mixer input (45) is connected to the main input (50) and the second local oscillator input (48) is connected to a source that provides a second local oscillator signal (LO2) with the sideband frequency ($n f_{LO}$). The second mixer (42) performs a multiplication of the input signal ($S_{RF}(t)$) and the second local oscillator signal (LO2) to provide a second output signal ($S_B(t)$) at the second mixer output (B). There are means for superpositioning (51) the first output signal ($S_A(t)$) and the second output signal ($S_B(t)$). The first local oscillator signal (LO1) and the second local oscillator signal (LO2) are square-wave signals. The apparatus (40) may comprise a third source that provides a third local oscillator signal (LO3). This third local oscillator signal (LO3) can be fed a mixer (43) where a multiplication is performed. If such a third source is used, the means for superpositioning (51) perform a superpositioning of three signals ($S_A(t)$), ($S_B(t)$), and ($S_C(t)$).

of the input signal ($S_{RF}(t)$) and the second local oscillator signal (LO2) to provide a second output signal ($S_B(t)$) at the second mixer output (B). There are means for superpositioning (51) the first output signal ($S_A(t)$) and the second output signal ($S_B(t)$). The first local oscillator signal (LO1) and the second local oscillator signal (LO2) are square-wave signals. The apparatus (40) may comprise a third source that provides a third local oscillator signal (LO3). This third local oscillator signal (LO3) can be fed a mixer (43) where a multiplication is performed. If such a third source is used, the means for superpositioning (51) perform a superpositioning of three signals ($S_A(t)$), ($S_B(t)$), and ($S_C(t)$).